

Sprouty 4 siRNA (h): sc-41041

BACKGROUND

Members of the Sprouty family (Sprouty 1-4) are inducible negative regulators of growth factors that act through tyrosine kinase receptors. Mammalian Sprouty homologs share a well-conserved cysteine-rich C-terminal domain with their *Drosophila* counterparts. Sprouty proteins are cytoplasmic in unstimulated cells but in cells stimulated by growth factors they anchor to the plasma membrane by palmitoylation. Sprouty 1 and 2 associate with caveolin-1 in perinuclear and vesicular structures and are phosphorylated on serine residues. Sprouty 2 can associate with c-Cbl, a down regulator of RTK signaling, and inhibit the activities of several growth factors. Unlike the widely expressed Sprouty members 1, 2 and 4, Sprouty 3 expression is restricted to adult brain and testis. Sprouty 4 is a target of the WNT/ β -catenin signaling pathway in progenitor cells. In conclusion, members of Sprouty inhibit FGF and VEGF-mediated cell proliferation, suggesting that they may regulate angiogenesis in normal and disease processes.

REFERENCES

- Lim, J., et al. 2000. Sprouty proteins are targeted to membrane ruffles upon growth factor receptor tyrosine kinase activation. Identification of a novel translocation domain. *J. Biol. Chem.* 275: 32837-32845.
- Impagnatiello, M.A., et al. 2001. Mammalian Sprouty 1 and 2 are membrane-anchored phosphoprotein inhibitors of growth factor signaling in endothelial cells. *J. Cell Biol.* 152: 1087-1098.
- Ozaki, K., et al. 2001. Erk pathway positively regulates the expression of Sprouty genes. *Biochem. Biophys. Res. Commun.* 285: 1084-1088.
- Mailleux, A.A., et al. 2001. Evidence that Sprouty 2 functions as an inhibitor of mouse embryonic lung growth and morphogenesis. *Mech. Dev.* 102: 81-94.
- Lee, S.H., et al. 2001. Inhibition of angiogenesis by a mouse Sprouty protein. *J. Biol. Chem.* 276: 4128-4133.
- Yigzaw, Y., et al. 2001. The C-terminus of Sprouty is important for modulation of cellular migration and proliferation. *J. Biol. Chem.* 276: 22742-22747.
- Bundschuh, K., et al. 2006. The VASP-Spred-Sprouty domain puzzle. *J. Biol. Chem.* 281: 36477-36481.

CHROMOSOMAL LOCATION

Genetic locus: SPRY4 (human) mapping to 5q31.3.

PRODUCT

Sprouty 4 siRNA (h) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Sprouty 4 shRNA Plasmid (h): sc-41041-SH and Sprouty 4 shRNA (h) Lentiviral Particles: sc-41041-V as alternate gene silencing products.

For independent verification of Sprouty 4 (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-41041A, sc-41041B and sc-41041C.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNases and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

Sprouty 4 siRNA (h) is recommended for the inhibition of Sprouty 4 expression in human cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 μ M in 66 μ l. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Sprouty 4 gene expression knockdown using RT-PCR Primer: Sprouty 4 (h)-PR: sc-41041-PR (20 μ l, 497 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

- Sharma, B., et al. 2012. Sprouty proteins are negative regulators of interferon (IFN) signaling and IFN-inducible biological responses. *J. Biol. Chem.* 287: 42352-42360.
- Vanas, V., et al. 2014. Sprouty4 interferes with cell proliferation and migration of breast cancer-derived cell lines. *Tumour Biol.* 35: 4447-4456.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.